

## **REMARKS**

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment, captioned **"Version with markings to show changes made."**

Claims 1-17 stand rejected under § 112. Claims 1, 7 and 11 have been amended to overcome this rejection by describing an electrode structure or a plurality of electrodes. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1-4 stand rejected under § 102 on the basis of Kondo et al. Claim 2 has been canceled, without prejudice, and included in claim 1. Thus, claim 1 now describes that first through third domains are formed in each of the pixel regions. As a result of the formation of the first through third domains, the response speed of the display panel is improved.

Applicants traverse this rejection because Kondo et al. is silent about such a formation of first through third domains inside a pixel. Moreover, an irradiation process of polarized ultraviolet radiation must be conducted several times to achieve control of the molecular alignment direction in the first through third domains described in the present specification. Mere formation of a similar electrode pattern is not sufficient to cause the formation of such domains. Kondo is silent about such UV exposure process. Accordingly, withdrawal of the rejection of claim 1, and the rejection of dependent claims 3 and 4, is respectfully requested.

Claims 5, 6 and 20 stand rejected under § 103 on the basis of Kondo et al. and Matsuyama et al. Claims 5 and 6 depend from claim 1, and are allowable for the reason previously given. Claim 20 depends from claim 18, which has also been amended to include the subject matter of claim 19, a feature not subject to this rejection. Reconsideration and withdrawal of this rejection is requested.

Claims 1 and 11-14 stand rejected under § 102 on the basis of Ohta et al. Applicants traverse this rejection because Ohta et al. do not disclose (or suggest) the subject matter of canceled claim 2, now in amended claim 1. Claim 11 has been amended to include the subject matter of canceled claim 15, which is not the subject of this rejection. Accordingly, withdrawal is respectfully requested.

Claims 15-17 stand rejected under § 103 on the basis of Ohta et al. in view of Abileah et al. and Asada et al.

With regard to original claim 15 (now claim 11), it is noted that Fig. 1 of Abileah et al. uses a multi-gap configuration merely for compensating for the different birefringence effect caused in the optical beams of different colors. The steps are formed in Abileah et al. in correspondence to the R, G and B color filters. Thus, Abileah et al. is irrelevant to the subject matter of the present invention and there is no motivation for a person skilled in the art to modify the teaching of Ohta et al. according to Abileah et al. Further, it is not possible to reach the subject matter of amended claim 11 by combining Ohta

et al. and Abileah et a. All that is derived from such a combination would be a structure in which cell thickness is changed among the pixels of different colors.

With amended claim 11 thus distinguished over the combination of Ohta et al. and Abileah et al., claims 16 and 17 depending from claim 11 are deemed distinct over the cited references. Withdrawal is requested.

Claim 18-20 stand rejected under § 103(a) as being unpatentable over Hiroshi in view of Kang et al.

Hiroshi merely teaches a conventional IPS LCD panel, while Kang teaches adjustment of pretilt angle of the liquid crystal molecules by way of exposure of the molecular alignment form to a polarized UV radiation. Contrary to Kang, the present invention uses polarized UV radiation for controlling the alignment direction of the liquid crystal molecules. In order to clarify this feature, claim 18 has been amended to include the subject matter of claim 19, which is not the subject of this rejection. Withdrawal is requested.

Applicants appreciate the indication that claims 7-10 contain allowable subject matter.

Claim 21 was not addressed in the office action, and applicants believe that claim 21 is also in condition for allowance.

For the foregoing reasons, applicants believe that this case is in condition for allowance, which is respectfully requested. The examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Claims:**

Claims 2, 12-15, and 19, were canceled, without prejudice.

Claims 1, 3, 4, 7, 11 and 18 were amended as follows:

1. (Amended) A liquid crystal display device, comprising:  
first and second, mutually opposing substrates;  
a liquid crystal layer confined between said first and second substrates;  
an electrode structure formed on said first substrate so as to create an electric field acting generally parallel to a plane of said liquid crystal layer; and  
a plurality of pixels being defined in said liquid crystal layer,  
each of said plurality of pixels including therein a plurality of domains having respective orientations for liquid crystal molecules, such that said orientation is different between a domain and another domain within said plane of said liquid crystal layer,  
wherein each of said plurality of pixels is formed in correspondence to said electrode structure, said electrode structure comprising a first electrode and a second electrode formed on said first substrate with a mutual separation, said plurality of domains

including a first domain adjacent to said first electrode, a second domain adjacent to said second electrode, and a third domain intervening between said first domain and said second domain, said liquid crystal molecules aligning, in said first and second domains, in a first direction forming a first angle with respect to a direction of said electric field within said plane of said liquid crystal layer, said liquid crystal molecules aligning, in said third domain in a second direction forming a second angle with respect to said direction of said electric field within said plane of said liquid crystal layer, wherein said second angle is larger than said first angle.

3. (Amended) A liquid crystal display device as claimed in claim 21, wherein said second angle is larger than about 50° and smaller than about 75°.

4. (Amended) A liquid crystal display device as claimed in claim 21, wherein said first and second electrodes extend parallel with each other, said first and second directions being in a symmetric relationship between a pair of mutually neighboring pixels with respect to an elongating direction of said first and second electrodes.

7. (Amended) A liquid crystal display device, comprising:

- first and second, mutually opposing substrates;
- a liquid crystal layer confined between said first and second substrates;
- ~~an electrode~~ a plurality of mutually separated electrodes provided on said first substrate so as to create an electric field acting generally parallel to a plane of said liquid crystal layer therebetween; and
- a spacer member disposed between said first and second substrates,
- said liquid crystal layer being formed of a liquid crystal having an initial resistivity of about  $1 \times 10^{14}$  cm,
- said spacer releasing an impurity to said liquid crystal layer.

11. (Amended) A liquid crystal display device, comprising:

- first and second, mutually opposing substrates;
- a liquid crystal layer confined between said first and second substrates;
- ~~an electrode~~ a plurality of electrodes formed on said first substrate so as to create an electric field acting generally parallel to a plane of said liquid crystal layer therebetween; and
- a plurality of pixels being defined in said liquid crystal layer,

each of said plurality of pixels including a plurality of domains having respective, mutually different electro-optic properties;

wherein said liquid crystal layer has, in each of said plurality of pixels, a thickness that changes in a direction perpendicular to a direction of said electric field acting generally parallel to said plane of said liquid crystal layer.

18. (Amended) A method of fabricating a liquid crystal display device, said liquid crystal display device comprising: first and second, mutually opposing substrates, a liquid crystal layer confined between said first and second substrates, and an electrode provided on said first substrate so as to create an electric field acting generally in a plane of said liquid crystal layer, said method comprising the step of:

exposing a molecular alignment film formed on each of said first and second substrates to a polarized ultraviolet radiation;

wherein said step of exposing said molecular alignment film is conducted in a state that a plane of polarization of said polarized ultraviolet radiation coincides with a desired alignment direction of liquid crystal molecules constituting said liquid crystal layer.